

Notice of Allowability	Application No.	Applicant(s)	
	10/600,621	WU ET AL.	
	Examiner	Art Unit	
	Henry S. Hu	1713	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Pre-Amendment of June 23, 2003.
2. ☒ The allowed claim(s) is/are 20-29.
3. ☒ The drawings filed on 23 June 2003 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|---|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____ |
| 3. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date <u>6-23-03</u> | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____ |

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in two telephone interviews with **Robert Carpenter** (tel. 202 857-6495) and **Richard Berman** (tel. 202 857-6000) on April 1 and 2, 2004 to amend the following claims:

Claims

Claim 20 at line 9 replace the word of "size" with "diameter"

Claim 20 at line 7 remove the phrase of "at least one of"

Claim 20 at line 10 remove the phrase of "preferably 0.55-1.0 g/cm³"

Claim 23 at line 2 remove the phrase of "preferably 15° - 70°C"

Claim 23 at line 3 remove the phrase of "preferably 10 and 20 rps"

Claim 24 at line 2 remove the phrase of “preferably in three steps ”

Claim 25 at line 3 remove the phrase of “preferably 50-200 g/litre ”

Claim 25 at line 5 remove the word of “preferably ”

Claim 25 at line 8 remove the phrase of “preferably between 50 and 200 g/litre ”

DETAILED ACTION

2. It is noted that this application 10/600,621 filed on June 23, 2003 is a **DIV of 09/887,113 06/25/2001, now US Patent No. 6,624,269**. According to the pre-amendment filed with the application on June 23, 2003, **Claims 1-19 were cancelled, and new Claims 20-29 were added**. The above examiner's amendment has corrected the above-mentioned improper language in Claims 20 and 23-25. Four drawing sheets with four figures submitted by the Applicants on June 23, 2003 have been previously approved since they are the same drawing used in the parent case 09-887113, now US Patent No. 6,624,269. **Claims 20-29 are pending now**.

Allowable Subject Matter

3. Claims 20-29 allowed.

4. The following is an examiner's statement of reasons for allowance: The above claims are allowed over the closest references:

5. The parent Claim 20 of present invention relates to a process for obtaining tetrafluoro-ethylene thermoprocessable copolymer microspheres, said process comprising the steps of:

(A) *providing equipment* formed by a coagulation apparatus, said equipment including a jacket for maintaining a temperature in the coagulation apparatus at a desired value, an outlet for the coagulated product, a coagulant inlet, a latex inlet, a filter, and a liquid outlet;

(B) *feeding latex and coagulant into respective inlets,*

wherein the microspheres have a substantially spherical shape for at least 95% by weight, the average diameter of the microspheres being in the range of 25 μm -2 mm, the bulk density being in the range 0.5-1.1 g/cm³. See other limitations of dependent Claims 21-29.

6. In a close examination, parent Claim 20 of present invention carries the specific limitation of “**providing equipment**” and “**feeding**” for a process for obtaining tetrafluoro-ethylene thermoprocessable copolymer microspheres as well as the limitation of “a substantially spherical shape for at least 95% by weight, the average diameter of the microspheres being in the range of 25 μm -2 mm, the bulk density being in the range 0.5-1.1 g/cm³” for properties of the copolymer microsphere material.

7. It should be noted that present invention has presented **a combination of the above-requirements** for coagulation process and its product properties. To be more specific as following: (A) both latex and coagulant are each feeding into respective inlets of the specific coagulation apparatus. Otherwise, the coagulation is not homogeneous; (B) such obtained microsphere has a property specification in both average diameter and bulk density; and (C) it only applies to **TFE thermoprocessable copolymer**.

US Patent No. 5,064,938 to Suzuki et al. have disclosed a continuous production process of particulate polymer and control method of the particle size (title), wherein the polymer latex is only added into a water medium to coagulate into a slurry (column 4, line 6-25). **No coagulant is used together with latex in the coagulation.** In a close examination, the average particle diameter reported in Tabela 1-11 can be controlled to be overlapping with the claimed range, while its **bulk density is always below the claimed range**. Additionally, **it only applies to non-fluorinated homopolymer or copolymer latexes** such as polyacrylates, polybutadiene, polychloroprene, polyvinyl halides and the like polymers (column 4, line 41 – column 5, line 10). Therefore, Suzuki does not teach or fairly suggest using the claimed coagulation process to prepare the TFE copolymer microsphere having the claimed properties.

8. US Patent No. 6,114,415 to Bertelo et al. have disclosed a batchwise or continuous process for producing coagulated particles of polymer latex, wherein the polymer latex is only injecting into a water medium through a receptacle or a baffle to coagulate into a slurry (see procedure at abstract, line 1-11 and the set up in front page). **The coagulant is disclosed to be**

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used together with latex (column 1, line 12-14). In a close examination, the average particle diameter reported on column 2 at line 4-12 can be controlled in the order of 3 to 5 mm and is therefore higher than with the claimed range, while its **bulk density is not reported**.

Additionally, it only applies to non-fluorinated homopolymer, copolymer or grafted polymer latexes such as polyacrylates, polyacrylonitrile, polyvinyl or polyvinylidene halides (which it may include fluoride) and the like polymers (column 3, line 35 – column 4, line 19).

Therefore, Bertelo does not teach or fairly suggest using the claimed coagulation process to prepare the TFE copolymer microsphere having the claimed properties.

US Patent No. 5,463,006 to Abuseleme et al. have disclosed the preparation of thermoprocessable copolymers of TFE and 0.5-13 wt% of perfluoromethylvinylether (abstract, line 1-15; see co-polymerization process in Examples 1-7), wherein the fluorinated copolymer is useful for coating electric cables by melt extrusion. In a close examination, the cooled emulsion obtained from copolymerization reactor is first discharged and coagulated by the addition of HNO₃ (65%), and the polymer is then separated, washed with water, dried at 220 °C, and palletized (column 6, line 20-25). No coagulant is used together with latex in the coagulation. In further examination, **average particle diameter or bulk density is not reported** on the data relating to the polymer characterization in Table 1 (column 7, line 2-24). Therefore, Abuseleme does not teach or fairly suggest using the claimed coagulation process to prepare the TFE copolymer microsphere having the claimed properties.

9. US Patent No. 5,498,682 to Navarrini et al. have disclosed the preparation of thermoprocessable terpolymers of TFE, 0.5 to 13 wt% of perfluoromethylvinylether and 0.05 to 3 wt% of a fluorinated dioxole (abstract, line 1-15; see co-polymerization process in Examples 1-16), wherein the fluorinated copolymer is useful for coating electric cables by melt extrusion (column 1, line 6-12). In a close examination, the cooled emulsion obtained from copolymerization reactor is first discharged and coagulated by the addition of HNO₃ (65%), and the polymer is then separated, washed with water, dried, and palletized (column 12, line 61-65). No coagulant is used together with latex in the coagulation. In further examination, average particle diameter or bulk density is not reported on the data relating to the polymer characterization in Table 1 (column 14, line 16-44). Therefore, Navarrini does not teach or fairly suggest using the claimed coagulation process to prepare the TFE copolymer microsphere having the claimed properties.

In a close examination, the above-mentioned four references, in combination or alone, fail to teach or fairly suggest using the claimed coagulation process to prepare the TFE copolymer microsphere having the claimed properties as claimed by the present invention.

Additionally, the present invention has shown in examples along with some comparative examples for unexpected results in obtaining tetrafluoroethylene thermoprocessable copolymer microspheres (see **pages 16-33 for examples 1-14** along with its **comparative control and Table 1**). Therefore, all the above-mentioned references, in combination or alone, does not teach or fairly suggest the limitations of present invention.

10. The two key issues, regarding (A) "providing equipment" and "feeding" for a process for obtaining tetrafluoroethylene thermoprocessable copolymer microspheres as well as (B) "a substantially spherical shape for at least 95% by weight, the average diameter of the microspheres being in the range of 25 μm -2 mm, the bulk density being in the range 0.5-1.1 g/cm^3 " for properties of the copolymer microsphere material, cannot be overcome by any or the combination of the above references, therefore, the present invention is novel.

11. As of the date of this office action, the examiner has not located or identified any reference that can be used singularly or in combination with another reference including the above references to render the present invention anticipated or obvious to one of the ordinary skill in the art. Therefore, the independent and parent **Claim 20** is allowed for the reason listed above. Since the prior art of record fails to teach the present invention, the remaining pending Claims 21-29 are passed to issue.

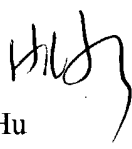
12. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance".

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13. Any inquiry concerning this communication or earlier communication from the examiner should be directed to Henry S. Hu whose telephone number is **(571) 272-1103**. The examiner can be reached on Monday through Friday from 9:00 AM –5:00 PM.

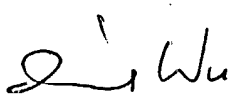
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached on (571) 272-1114. The fax number for the organization where this application or proceeding is assigned is (703) 872-9306 for all regular communications.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Henry S. Hu

April 12, 2004



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SUPERVISORY PATENT EXAMINER
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